

## ABSTRACT

An adaptive intelligent radio module (IRM) is provided in an intelligent radio design for gateways between satellite and terrestrial networks. The intelligent radio module monitors channel signal quality at the channel units of the gateway to determine whether the quality of a channel unit is below a predetermined quality threshold. If the channel quality is greater than or equal to the predetermined quality threshold, then a standard channel unit is employed, and nominal algorithms are used to process the channel. However, if the channel quality is below the quality threshold, then a high performance channel unit is used that employs complex algorithms unique to the particular quality defect of the channel quality. Various additional functions can be performed at the receive side and the transmit side of the channel units monitored by the IRM. Further, the IRM can add or enhance existing algorithms in accordance with new technology.